



Japanese Unexamined Patent Publication No. H09-213338

## BATTERY AND LITHIUM ION SECONDARY BATTERY

[0007]

[Modes for Carrying Out the Invention] The present invention involves a battery comprising a positive electrode plate and a negative electrode plate laminated through an electrolytic layer, a current collector of at least one of the positive electrode plate and the negative electrode plate being composed of a conductive thin film formed on a surface of a resin film or a resin sheet. Particularly, since strip plates are used when the positive electrode plate and the negative electrode plate are wound while being laminated through the electrolytic layer, the weight ratio of the current collector to the whole battery is increased. Therefore, by reducing the weight of a current collector constitutive element, the weight of the whole battery can be remarkably reduced to enhance the weight energy density of the battery. In the case of such winding, conductive thin films are formed on both surfaces of the resin film or resin sheet.

[0008] As the resin film or resin sheet, those made of materials such as polyethylene terephthalate (PET), polyimide and polypropylene are usable. As the conductive thin film, an appropriate material such as an aluminum thin film or copper thin film can be selected according to the battery.

[0009] The conductive thin film can be formed by vacuum evaporation, sputtering, plating or the like. When the evaporation is adapted to form the conductive thin film, the conductive thin film can be thinned to effectively reduce the weight of the current collector. Further, the conductive thin film can be firmly connected to the resin film.